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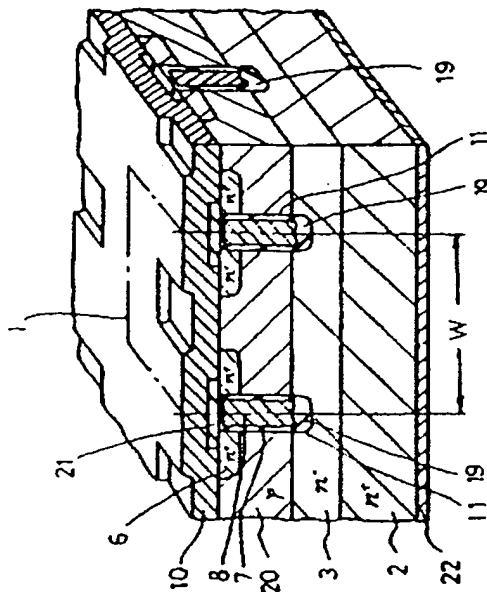
APPLICATION DATE : 27-01-88  
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TITLE : SEMICONDUCTOR DEVICE



ABSTRACT : PURPOSE: Not only to improve a device in breakdown strength but also micronize a cell in size by a method wherein a trench is provided so as to reach to a drain region, a gate oxide film is formed on the inner wall of the trench, and the oxide film formed on the base of the trench is made thicker than one formed on the side wall or other parts of the trench.

CONSTITUTION: A source region 6 is formed on a primary face of a semiconductor substrate 2 in a grating. A trench (deep groove) 11 is provided along a center of the source region 6. The base of the trench 11 reaches an epitaxial layer 3 or a superficial layer of the semiconductor substrate 2 penetrating a channel forming layer 20. A gate oxide film 7 is provided covering the inner wall of the trench 11. The gate oxide film 7 is 500 $\mu$ m in thickness at the side wall of the trench and 2000 $\mu$ m~3000 $\mu$ m thick at the base of the trench 11. A device of this design is formed in such a structure that the gate oxide film 7 is provided onto the wall of the trench 11 and a gate electrode buried in the trench 11, so that the cell can be diminished in size. A gate oxide film formed on the base of a trench is made thick, wherefore an electric field between a gate and a drain is alleviated and the drain is improved in breakdown strength.

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